

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE: NH000-0006-02(055) Dougherty **OFFICE:** Engineering Services
P.I. No.: 422550
SR 91 & SR 520/US 82 Interchange **DATE:** July 22, 2011

FROM: Ronald E. Wishon, State Project Review Engineer *REW*

TO: Bobby K. Hilliard, PE, State Program Delivery Engineer
Attn.: Albert Shelby

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

The VE Study for the above project was held April 11-14, 2011. Responses were received on July 20, 2001. Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. The Project Manager shall incorporate the VE alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT #	Description	Potential Savings/LCC	Implement	Comments
R-2	Use 12 ft wide shoulders in lieu of 16 ft wide shoulders on N. Jefferson St. and Philema Rd	\$120,000	Yes	This will be done.
R-3	Reduce the raised median island from 20 ft wide to 16 ft wide on N. Jefferson St	\$34,000	Yes	This will be done.
R-4	Provide 11 ft wide travel lanes on N. Jefferson St. and Philema Rd	\$79,000	No	Construction of 11 ft wide lanes will not be done due to the high volume of truck traffic (9%) and the curvilinear alignments of North Jefferson Street and Philema Road.
R-5	Provide 11 ft wide inside travel lanes on N. Jefferson St. and Philema Rd	\$63,000	Yes	This will be done.
R-7	Remove guardrail and anchorages on Ramp A from Sta. 223+25 to Sta. 224+50 Rt.	Design Suggestion	Yes	This will be done.
R-8	Reduce the sidewalk width from 8 ft to 5 ft on the right side of N. Jefferson St	\$15,000	Yes	This will be done.

R-9	Provide a rural shoulder in lieu of an urban shoulder on the left side of N. Jefferson St. from Sta. 123+00 to Sta. 133+20 Lt.	\$84,000	Yes	This will be done.
R-10	Provide a 12 ft wide multi-use trail on the left side of N. Jefferson St and a 5 ft wide sidewalk on the right side in lieu of the 4 ft wide bicycle lanes on both sides and 5 ft wide sidewalk on the left and 8 ft sidewalk on the right	\$128,000	Yes	This will be done.
R-13	Provide 8 ft paved outside shoulders in lieu of 10 ft paved outside shoulders on Ramps A and B	\$148,000	Yes	This will be done.
S-1	Reduce the ramp A bridge width from 34 ft to 30 ft by narrowing the shoulders 2 ft per side	\$71,000	Yes	This will be done.
S-2	Reduce the Ramp B bridge width from 42 ft to 38 ft by narrowing the shoulders 2 ft per side	\$130,000	Yes	This will be done.
S-4	Reduce the length of the Ramp B bridge by 52 ft by providing a retaining wall abutment on the east end	\$172,000	No	A revised estimate indicates this alternative would have a cost increase of \$43,675. In addition, there are more maintenance issues with MSE walls and the approach roadway than there are with typical spill through abutments. MSE wall abutments limit the possibility of future expansion for both the road being carried as well as the facility beneath the structure. Due to sequence of construction, coordination with subcontractors and equipment, bridge costs and wall costs are higher than the general bridge and wall costs for separate structures.

S-5	Reduce the Ramp A bridge length by 37 ft	\$109,000	No	A revised estimate indicates this alternative would have a cost increase of \$240. In addition, there are more maintenance issues with MSE walls and the approach roadway than there are with typical spill through abutments. MSE wall abutments limit the possibility of future expansion for both the road being carried as well as the facility beneath the structure. Due to sequence of construction, coordination with subcontractors and equipment, bridge costs and wall costs are higher than the general bridge and wall costs for separate structures.
S-7	Provide a GDOT standard concrete side barrier for the wall at Ramp B from Sta. 309+50 to Sta. 313+00	Design Suggestion	Yes	This will be done. If the height of the retaining wall increases, than an MSE wall would be more economical.
C-1	Modify the sequencing of Stage 1 to include removing the raised median first and then shifting traffic on N. Jefferson St. and Philema Rd. during stage 1 of construction	Design Suggestion	Under Review	The stage construction plans will be further investigated to determine the feasibility of this alternative.
C-3	Use the existing WB Liberty Express exit ramp for right and left turns onto N. Jefferson St. during construction to enable earlier closure of the existing SB N. Jefferson St entrance ramp	Design Suggestion	Under Review	The stage construction plans will be further investigated to determine the feasibility of this alternative.
G-1	Reroute the 18 in RCP from the existing pipe through the proposed wingwall at Sta. 698+00	Design Suggestion	Under Review	The drainage will be further investigated to determine the feasibility of this alternative.

The Office of Engineering Services concurs with the Project Manager's responses.

Approved:  Date: 7-22-11
Gerald M. Ross, PE, Chief Engineer

REW/LLM

Attachments

c: Russell McMurry
Bobby Hilliard/Stanley Hill/Albert Shelby
Russell McMurry/Chuck Hasty/Nicoe Alexander/Travis McDonald
Paul Liles/Ben Rabun/Bill Duvall/Bill Ingalsbe
Amber Phillips
Joe Sheffield/Brent Thomas/Scott Chambers/Tony Cravey/Geno Hasty/Van Mason
Ken Werho
Lisa Myers
Matt Sanders

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA



INTERDEPARTMENTAL CORRESPONDENCE

FILE NH-006-2(55), Dougherty County
SR 3/ Liberty Expressway @ North Jefferson St.
P.I. No. 422550

OFFICE Program Delivery

DATE July 19, 2011

FROM Bobby K. Hilliard, P.E., State Program Delivery Engineer *B.K.H.*

TO Ron Wishon, State Review Engineer

SUBJECT **Value Engineering Study Report Responses**

The Office of Program Delivery has received the Value Engineering Final Report dated April 25, 2011. The study developed twelve alternatives to be evaluated. The attached responses from the Subject Matter Expert Offices of Roadway and Bridge Design are responsive to these alternatives.

If there are any questions or concerns, please contact the project manager, Albert Shelby, at 404-631-1758.

BKH:SH:avs

Attachments:

- VE responses from the Office of Roadway Design dated May 19, 2011
- VE responses from the Office of Bridge Design dated July 1, 2011

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE NH000-0006-02(055), Dougherty County **OFFICE** Atlanta, Georgia
P.I. No.: 422550-
SR 3/Liberty Expressway at SR 91 and **DATE** May 19, 2011
North Jefferson Interchange Ramps

FROM Russell R. McMurry, P.E., State Roadway Design Engineer

TO Bobby K. Hilliard, P.E., State Program Delivery Engineer
Attention: Albert Shelby, Project Manager

SUBJECT **Value Engineering Study Report - Responses**

This office has reviewed the Value Engineering Study Final Report dated April 27, 2011, for the above referenced project. Listed below are the responses to the recommendations regarding Roadway, Construction Staging, and General contained therein (the Office of Bridge Design will provide a response to the recommendations regarding Structures):

ROADWAY

Alternative R-2: Use 12-ft. wide shoulders in lieu of 16-ft. wide shoulders on North Jefferson Street and Philema Road.

Total Present Worth Life-Cycle Cost Savings: \$120,000

Response: Construction of 12-ft. wide shoulders on North Jefferson Street and Philema Road will reduce impacts to adjacent properties and lower overall construction costs.

Implement: Yes

Alternative R-3: Reduce the raised median island from 20-ft. wide to 16-ft. wide on North Jefferson Street

Total Present Worth Life-Cycle Cost Savings: \$34,000

Response: Construction of a 16-ft. wide median in lieu of a 20-ft. wide median will reduce impacts to adjacent properties and lower overall construction costs.

Implement: Yes

Alternative R-4: Use 11-ft. wide lanes in lieu of 12-ft. wide lanes on North Jefferson Street and Philema Road.

Total Present Worth Life-Cycle Cost Savings: \$79,000

May 19, 2011

Response: Construction of 11-ft. wide travel lanes is not recommended due to the high volume of truck traffic (9.0%) and the curvilinear alignments of North Jefferson Street and Philema Road.

Implement: **No**

Alternative R-5: Use 11-ft. wide inside lanes in lieu of 12-ft. wide lanes on North Jefferson Street and Philema Road

Total Present Worth Life-Cycle Cost Savings: \$63,000

Response: Construction of 11-ft. wide inside travel lanes in lieu of 12-ft. wide lanes will reduce impacts to adjacent properties and lower overall construction costs.

Implement: **Yes**

Alternative R-7 (Design Suggestion): Eliminate guardrail and anchorages on Ramp A from Station 223+25 to Station 224+50, Right.

Total Present Worth Life-Cycle Cost Savings: Not calculated

Response: Eliminating the guardrail and grading a traversable, recoverable front slope will lower overall construction costs.

Implement: **Yes**

Alternative R-8: Reduce the sidewalk width from 8-ft. wide to 5-ft. wide on the right side of North Jefferson Street.

Total Present Worth Life-Cycle Cost Savings: \$15,000

Response: Construction of a 5-ft. wide sidewalk in lieu of an 8-ft. wide sidewalk will lower overall construction costs.

Implement: **Yes**

Alternative R-9: Provide a rural shoulder in lieu of an urban shoulder on the left side of North Jefferson Street from Station 123+00, Left to Station 133+20, Left.

Total Present Worth Life-Cycle Cost Savings: \$84,000

Response: Construction of a rural shoulder along the left side of North Jefferson Street between Stations 123+00 and 133+20 in lieu of an urban shoulder will significantly lower over construction costs as well as construction contract time.

Implement: Yes

Alternative R-10: Provide a 12-ft. wide multi-use trail on the left side of North Jefferson Street in lieu of the 4-ft. bicycle lanes and 5-ft. sidewalk.

Total Present Worth Life-Cycle Cost Savings: \$128,000

Response: Construction of an 8-ft. multi-use trail in lieu of 4-ft bicycle lanes and 5-ft. wide sidewalk will significantly reduce overall construction costs.

Implement: Yes

Alternative R-13: Provide an 8-ft. wide paved, outside shoulder in lieu of a 10-ft. wide paved, outside shoulder on Ramps A and B.

Total Present Worth Life-Cycle Cost Savings: \$148,000

Response: Construction of an 8-ft. wide paved, outside shoulder in lieu of a 10-ft. wide paved, outside shoulder on Ramps A and B will significantly reduce overall construction costs.

Implement: Yes

CONSTRUCTION STAGING (DESIGN SUGGESTION)

Alternative C-1: Modify sequencing of Stage 1 to include removal and full-depth paving of the existing median first, and then shifting traffic south on North Jefferson Street and Philema Road.

Total Present Worth Life-Cycle Cost Savings: Not calculated

Response: The Stage Construction Plans will be further investigated to determine the feasibility of the alternative.

Implement: **Under Review**

May 19, 2011

Alternative C-3: Utilize the existing Westbound Liberty Expressway Exit Ramp for right and left turns onto North Jefferson Street during construction to enable earlier closure of the existing Southbound North Jefferson Street Entrance Ramp.

Total Present Worth Life-Cycle Cost Savings: Not calculated

Response: The Stage Construction Plans will be further investigated to determine the feasibility of the alternative.

Implement: **Under Review**

GENERAL

Alternative G-1: Revise the 18-inch RCP at Station 698+00 to route it through the proposed wing wall.

Total Present Worth Life-Cycle Cost Savings: Not calculated

Response: The drainage will be further investigated to determine the feasibility of the alternative.

Implement: **Under Review**

If you have any additional questions or comments, please contact Nicoe Alexander, P.E., Design Phase Leader at (404) 631-1717.

RRM:CAH:JNA:tm

INTERDEPARTMENT CORRESPONDENCE

OFFICE Atlanta, GA
DATE July 1, 2011

FROM Benjamin F. Rabun, III, P.E., State Bridge Engineer

to Bobby Hilliard, P.E., State Program Delivery Engineer
Attn: Albert Shelby

SUBJECT **BRIDGE DESIGN VALUE ENGINEERING RESPONSE**

The Value Engineering Study for the above referenced project dated April 25, 2011 contained five VE Alternatives requiring responses from the Bridge Office: VE Alternatives S-1, S-2, S-4, S-5 and S-7. The Bridge Office proposes the following in response.

VE Alternative S-1 – “Reduce the Ramp A Bridge from 34-ft.-wide to 30-ft.-wide by narrowing the shoulders 2 ft. per side”

Recommendation: Implement

VE Alternative S-2 – “Reduce the Ramp B Bridge from 42-ft.-wide to 38-ft.-wide by narrowing the shoulders 2 ft. per side”

Recommendation: Implement

VE Alternative S-4 – “Reduce the length of the Ramp B Bridge by 52 ft. by providing a retaining wall abutment on the east end”

Recommendation: **Do Not Implement.** A revised estimate indicates that this alternative would have a cost increase of \$43,675. In addition, there are more maintenance issues with MSE walls and the approach roadway than there are with typical spill through abutments. MSE wall abutments limit the possibility of future expansion for both the road being carried as well as the facility beneath the structure. Due to sequence of construction, coordination with subcontractors and equipment, bridge costs and wall costs are higher than the general bridge and wall costs for separate structures.

VE Alternative S-5 – “Reduce the length of the Ramp A Bridge by 37 ft. by providing a retaining wall abutment on the west end”

Recommendation: **Do Not Implement.** A revised estimate indicates that this alternative would have a cost increase of \$240. In addition, there are more maintenance issues with MSE walls and the approach roadway than there are with typical spill through abutments. MSE wall abutments limit the possibility of future expansion for both the road being carried as well as the facility beneath the structure. Due to sequence of construction, coordination with subcontractors and equipment, bridge costs and wall costs are higher than the general bridge and wall costs for separate structures.

VE Alternative S-7 – “Provide a standard concrete side barrier for the retaining wall west of Ramp B from Sta. 309+50 to Sta. 313+00”

Recommendation: **Implement.** Please note, if the height of the retaining wall increases, then an MSE wall would be more economical.

If you have any questions and/or comments, please contact Bill DuVall of the Bridge Design Office at (404) 631-1883 or at email address bduvall@dot.ga.gov.

BFR:WMD

Attachment: cost worksheet

cc: Ron Wishon, Engineering Services
Bill DuVall, Bridge Design

COST WORKSHEET



PROJECT:		SR 133/N. JEFFERSON ST. FROM SR 520/US 82 LIBERTY EXPRESSWAY TO SR 91/PHILEMA RD. INTERCHANGE RECONSTRUCTION NH000-0006-25(055); PI No. 422550 Dougherty County, Georgia			ALTERNATIVE NO.: S-4		
					SHEET NO.: 3 of 3		
PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Ramp B Bridge Area	SF	14,684	95.00	1,394,944	12,331	98.00	1,208,401
					12602	95	1,197,201
* Note: \$98 SF is to account for the wall abutment.							
Additional Concrete Pavement	SY				139	70.30	9,749
Additional Asphalt for Shoulders	SY				81	59.50	4,813
Additional Embankment	CY				1,260	6.50	8,190
MSE	SR				4,200	45.0	189,000
Add. MSE BACKFILL	CV				317	43.0	13,654
COPING A	LF				190	75.0	14,250
Subtotal				1,394,944			1,231,153
Markup (%) at 5.00%				69,747			71,942
TOTAL				1,464,691			1,292,711
TOTAL (ROUNDED)				1,465,000			1,293,000

1,436,851

1508675

$\Delta = 43,675$ INCREASE

COST WORKSHEET



PROJECT:	SR 133/N. JEFFERSON ST. FROM SR 520/US 82 LIBERTY EXPRESSWAY TO SR 91/PHILEMA RD. INTERCHANGE RECONSTRUCTION NH000-0006-25(055); PI No. 422550 Dougherty County, Georgia	ALTERNATIVE NO.: <div style="text-align: right; font-weight: bold;">S-5</div>
	SHEET NO.:	3 of 3

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Ramp A Bridge Area	SF	6,593	95.00	626,359	5,215	98.00	511,070
					5,475.75	95	520,196
* Note: \$98/SF to account for the wall abutment.							
Additional Concrete Pavement	SY				66	70.30	4,624
Additional Asphalt for Shoulders	SY				58	59.50	3,425
Additional Embankment	CY				605	6.50	3,930
MSE	SF				1850	45	83,250
Add. MSE Backfill	CY				20	43	1,720
CODING A	LF				130	75	9,750
Subtotal				626,359			
Markup (%) at 5.00%				31,318			
TOTAL				657,677			
TOTAL (ROUNDED)				658,000			

626,359
 523,049
 31,318
 549,201
 549,000
 658,240

